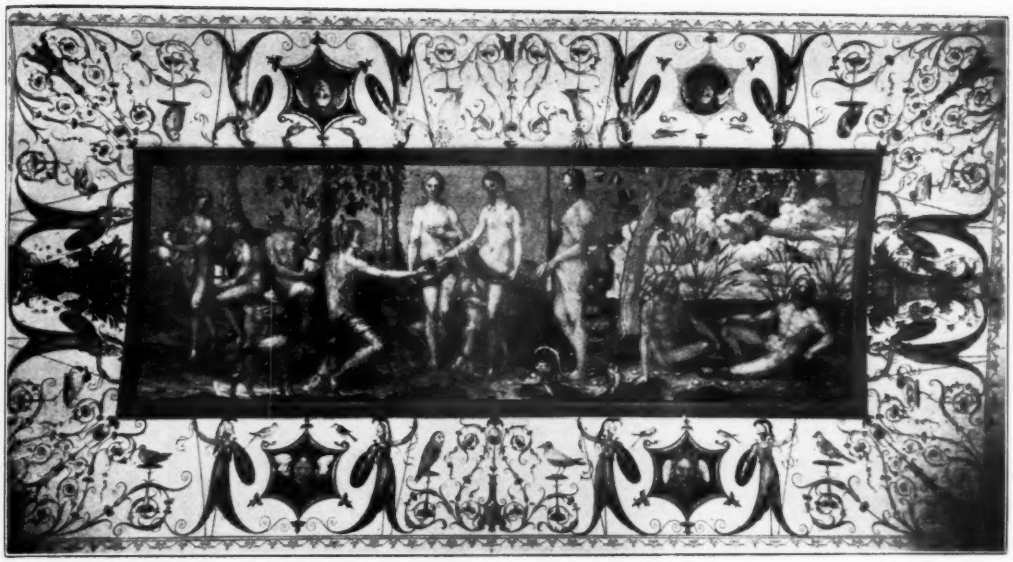


STAINED GLASS.

By Alexander Gascoyne and Arthur J. Dix.

Read before the Royal Institute of British Architects, Monday, 18th December 1905.

I. By Alexander Gascoyne.

I DO not propose to treat of the history of stained glass, of which you have very probably a better knowledge than I have myself. Our concern is to master the principles on which the success of the famous old examples depends, and apply them to modern needs. If anyone is interested in the historical development of stained glass, he cannot do better than read Westlake's *History of Painted Glass*. Neither shall I touch on the technical processes, as anyone can obtain a knowledge of those from various recent works on the subject.

The best examples of old stained glass that have survived the vandalism of later times show various possible methods of treatment, each of which is admirably suitable for the purpose for which it was used. Without attempting to copy deliberately, we can learn many lessons from the work that remains; and if only we can catch the spirit and feeling that inspired these early glaziers, and work it into modern requirements, we shall be progressing towards perfect work.

Where a light treatment is required, what better model can we desire than the beautiful arrangement of our best fifteenth-century glass—*e.g.* York Minster, and Morley Church in Derbyshire? The windows in the north of the nave of Cologne Cathedral also afford excellent examples.

About two-thirds of each of these windows are in whites, and the remaining one-third deep pieces of rich colour, which, seen in contrast to the other glass, gives a brilliance which can scarcely be described. A certain amount of yellow stain introduced gives the necessary warmth without spoiling the delicate tones of the white parts.

Whether or not glass can be manufactured equal to the old glass is a matter of opinion; but by waiting and picking out the choicest sheets at the makers', and carefully selecting these for your work, results can be obtained which will favourably compare with the early windows.

It is the inequalities, variations of thickness and colours, and accidental markings which give the depth and brilliancy to the glass, and upon their judicious employment depends the success of the work. Any designer who superintends his work, if he be worthy of the name, will exercise the greatest care in choosing materials, although much has been said to the contrary; and you can rely upon him using the right glass in the proper place, independent of its cost. The cost of material is but a small proportion of the total in a painted window, even as the cost of an artist's colours is a mere bagatelle compared with the value of his time.

Does an artist ask his patrons to watch him use a guinea tube of blue, or say his painting must be good because he spent so much on paint? No; he simply uses the colours he needs, as we ourselves do in making choice of our glass.

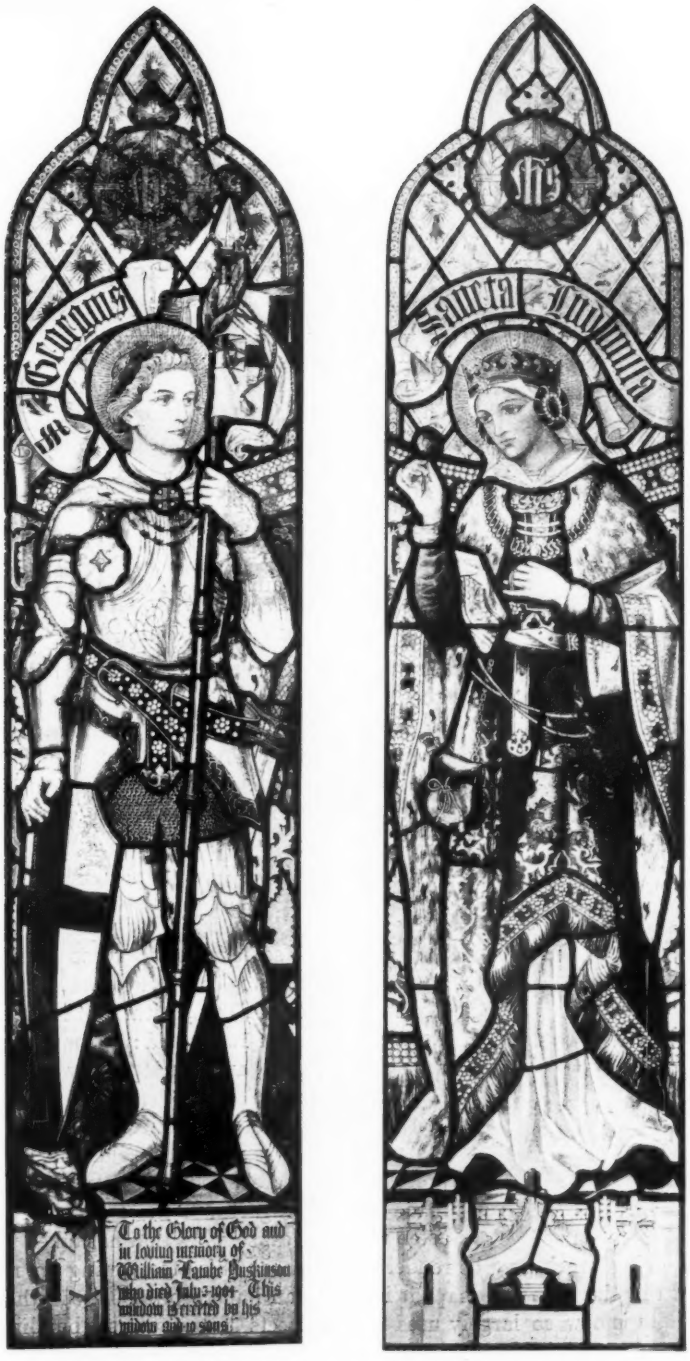
The treatment which suits one window does not necessarily suit another, nor need we continually design windows with architectural canopies and bases because they are used in the old examples. Beautiful results can be obtained by giving a free rendering of the early principles, and by designing foliage or ornament to take the place of canopies and bases, without losing the feeling or character of the old glass.

There are many positions in both domestic and ecclesiastical buildings where the primary object of stained glass is to give a brilliant colour scheme. No one who has seen the beautiful old windows by Ghiberti in Florence can have failed to admire their wonderful colour schemes, and for positions in large buildings where colour is required no better study can be found than these windows. They are practically designed for one gorgeous colour effect. The study of these windows demonstrates what can be done in this direction. Unfortunately, it is not always possible to get the opportunity to introduce so much colour, nor would it always be desirable. But windows are constantly being filled where a treatment upon these lines would have been more successful than the one adopted. We have grand examples to follow if only we will be guided by them, and attempt to give a modern rendering of the old work, which will stamp our glass with the individuality of the present age without being a slavish, and often but a poor, copy of some of the various old styles (so called) in stained glass.

It is immaterial what particular style is adopted providing we allow our originality to develop that style, and produce stained glass which for charm of design and colour will adapt itself to the character of the building.

The assistance capable architects can give in suggestions for the general schemes of windows cannot be over-estimated, and their co-operation has produced in many instances most successful results. When the architectural profession as a whole demands really good work, and encourages designers who are known to have the interests of their craft at heart, then I can assure you there will be no lack of beautiful work. I can safely say that any improvement which has taken place in stained glass is in a great measure due to those architects who fully appreciate any endeavour towards raising the quality of work.

Stained glass is one of the most permanent forms of decoration, and unless it can be executed in the best way ought not to be done at all; for badly executed work is only a lasting disgrace to our craft, and merely an example of the bad influence of the commercial tendency of the times. The modern soulless commercial man asks for what is cheapest, not what is best.


To the Glory of God and
in loving memory of
William Lambe Huskinson
who died July 3 1904 This
window is erected by his
widow and 10 sons.

MEMORIAL WINDOW TO THE LATE W. L. HASKINSON, ESQ., SOUTH AISLE, EPPERSTONE, NOTTS.
DESIGNED BY ALEXANDER GASCOYNE.

One point I should like to impress upon you in designing stained glass for churches is, that the windows have a double mission.

They should form a beautiful decoration and be devotional in feeling. The figures introduced should be an aid, not a hindrance, to devotion—to those people, at least, who are capable of such feeling. Arouse the critical faculty, and no devotion is possible.

STAINED-GLASS WINDOW, LADY CHAPEL, ST. HUGH'S, LINCOLN.
DESIGNED BY ALEXANDER GASCOYNE.

Many of the windows of our cathedrals and churches are a positive distraction either to the worshipper with artistic instincts or to the devout churchman who has a knowledge of the details of ritual.

To design good windows much careful consideration is necessary; and I cannot imagine a man doing really good work in this direction who is not personally in sympathy with the objects of the design on which he is engaged. It is to the unsympathetic artist that many of the errors to be found in various windows are attributed. To cite examples.

Bishops are depicted holding their pastoral staff in the right hand and blessing with their left. Albs are made every colour of the rainbow to suit the convenience of the designer, and the general ignorance displayed upon many church matters robs the window of all meaning.

In a window in Lincoln Cathedral, to give another case in point, a bishop is represented receiving the pax, kneeling with his mitre on, when he should be shown standing with his mitre off.

To those indifferent to ritual all this is of little importance; but I maintain that it is of the greatest importance, for if work is worth doing at all it is worth doing correctly.

To design a church window should be a work of love, and the artist will not be satisfied unless the symbolism truly interprets the teaching.

People are sometimes apt to consider the production of stained glass to be a lucrative source of income. Professor Aitchison, R.A., lecturing in connection with the Royal Academy in 1903, said: "The master glazier was once as well paid, and consequently as well thought of, as a master builder or architect; and he is probably much better paid now than the architect." They fail to remember the many risks to which the glass is liable before the process is completed, and how much provision must be made for the vagaries of the kiln. For instance, from some unknown cause, work that has taken weeks of labour may in its final firing crack, and be rendered valueless; this, too, owing to no carelessness upon the part of the kilnman. Perhaps it is due to an imperceptible flaw in the material.

Domestic glass is now so largely used by architects that few new buildings are without some specimen of either stained glass or ornamental leaded glazing.

Stained glass for modern houses should be designed to form part of the decorative scheme of the room in which it is to be fixed. Often little or no information is given to a designer as to the character of the building, or of the architect's intentions concerning his interior treatment of decoration. It is always far more satisfactory to see the building before preparing designs if important stained glass is required. The aspect of the openings proposed to be filled with glass is a point too often forgotten when asking for sketches.

Rich colour schemes should be used with the greatest care, as what one can use, for example, in an ingle-nook would not perhaps be in good taste in another position. Where a different treatment is required, then should separate designs be prepared for each window. Simple treatment in white glass has been greatly used by some architects with most satisfactory results, harmonising admirably with any style of decoration.

The importance of massing the design in domestic ornamental glass cannot be overestimated, for the success of the work undoubtedly depends upon it.

Striving after eccentricity in design has led to the execution of work of which one soon grows heartily tired, and although the New Art movement may have aroused an interest in Art matters, yet the extremes to which some designers have gone in this direction are calculated to excite the utmost ridicule.

Architects sometimes desire to see the working drawings; but what they really mean is the preparation of a full-size detail showing the various thicknesses of the leads to be used. This is not a working drawing, and we have to prepare one afterwards, which is simply a line drawing of the various shapes of the glass to guide the cutter in cutting the glass, and afterwards the glazier to piece the glass together. The full-size drawing is therefore of no use from a practical point of view, although it may serve to enable the architect to form an idea as to the general effect of the leads. I would emphasise the fact that unless every care is taken in making the cut-line from this detail all the architects' trouble may be lost.

To further illustrate my meaning, I have brought some cartoons for ecclesiastical work with two windows to show the relation of cartoon to the actual work.

I have also prepared some drawings suitable for domestic purposes, figure subjects with simple backgrounds, so necessary where light is needed, and others introducing armorial subjects.

Heraldry, upon the lines of the fourteenth and fifteenth centuries, always arouses the enthusiasm of the glass painter; it gives such wide scope for drawing, and the colours never clash with any scheme of decoration.

Much can be said upon the artistic treatment of leaded glazing, but that does not come strictly within the confines of a short paper on Stained Glass.

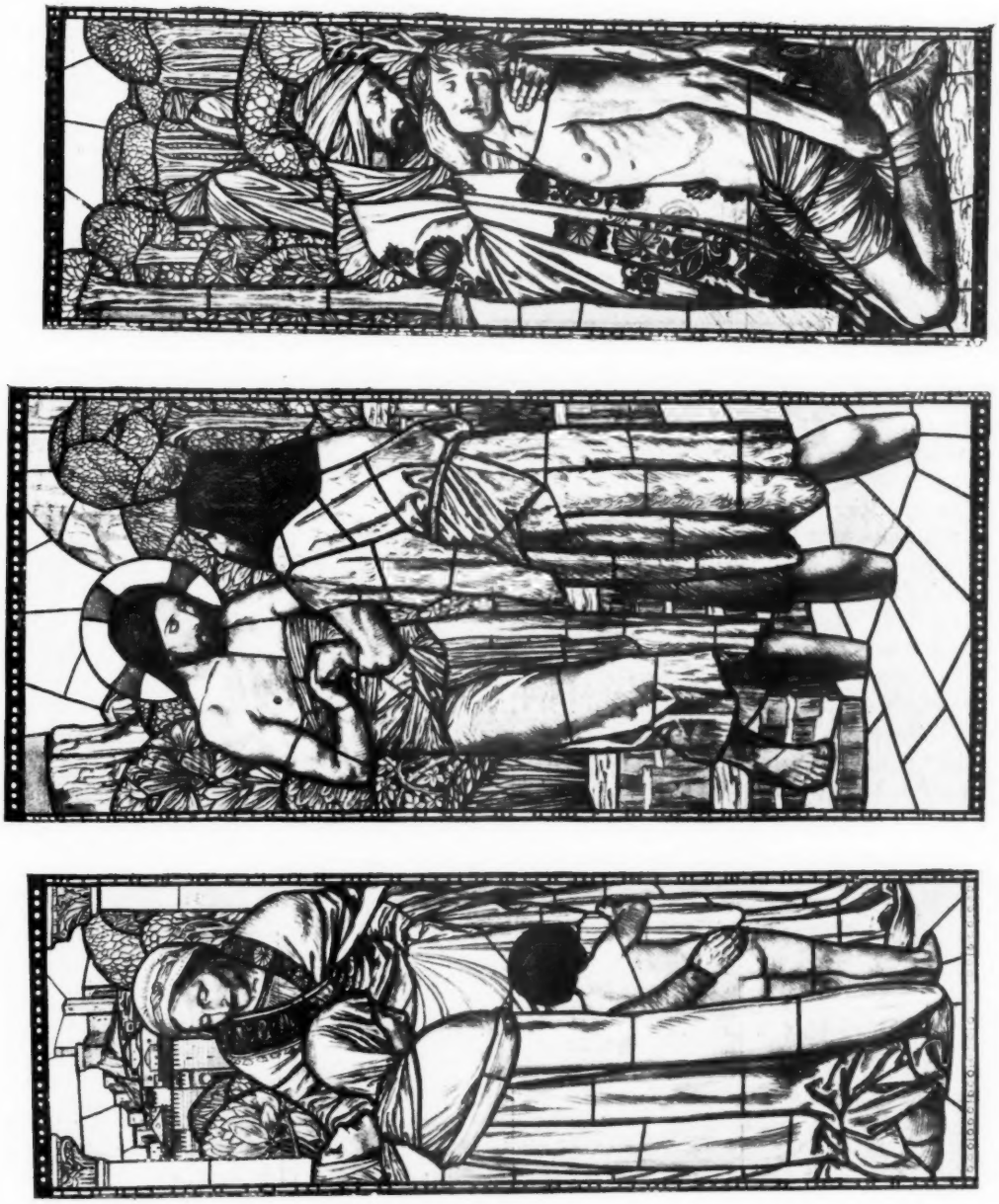
II. By Arthur J. Dix.

IT seems perhaps unnecessary to explain, in commencing this Paper on stained glass, the difference between that and painted glass. I am sure all present thoroughly appreciate that difference—when that a stained-glass window may be composed of coloured glass painted upon or not, and held together by lead-work; and a painted-glass window is produced by painting or enamelling upon the glass, and not dependent upon the lead-work to assist in forming the design. There are two kinds of stained or coloured glass—namely, "pot metal," in which the colour goes through the glass, the ingredients being mixed in the pot—hence its name—and "flashed" glass, which is made from a pure white or tinted "metal," and coated or flashed with a film of coloured glass. This, then, is stained glass, and a window filled with such material irrespective of colour, design or no design, must therefore literally be a stained-glass window.

But what I have to deal with to-night is the making of what is generally understood by a stained-glass window—that is, the using of this material in a way that shall interest and charm by a variety of design and combinations of colour in which it may be employed. It is not my intention to refer to the use made of such design in the past, or to dwell upon that of the present; suffice it to say that a design for a stained-glass window may be in any medium and upon whatever material that most commends itself to the artist, even painted on glass in transparent colours, or of small pieces of the actual coloured glass itself put together like a mosaic. Nor is it always necessary that a design should be made at all; the cartoon may be drawn in the first instance, and a colour scheme for guidance in choosing the glass may be a coloured photograph of the cartoon, or a sketch to scale of the lead-work, coloured in, perfecting the scheme already in the mind and suggested by a possible rough sketch made before starting the cartoon. In my opinion the highly finished competitive design for a stained-glass window is a mistake, a delusion, a snare. An attractive design is by no means a guarantee of a good window. The capabilities of a maker of stained glass should be judged by his finished work and not by a design.

One very important point to observe is the architectural fitness of the design. By this I do not mean the adapting or copying some style or period of glass which corresponds with the style of window to be filled, but the suitability as regards proportion, not only as a whole, but in detail. It should always be treated in such a way that will keep the window subservient to the architecture, about which there need be no fear if a strict adherence be observed to the natural limitation of the material. Briefly, the window is a flat surface, and should not be decorated in any way that would suggest that it is otherwise. A bold, straightforward acceptance rather than evasion of the necessity of leads and substantial supporting bars, making them, if not the most important, a great feature in the element of design, would help to ensure the necessary decorative result.

The position and size of window should be thoroughly considered, as much detail is often thrown away and a broadness of effect missed by over-elaborating a window which is only seen from a distance; also the amount of light one may safely exclude without over-darkening the interior of the building should be considered. Windows are primarily intended to admit light; therefore in most cases stained-glass windows should perform this duty. Nevertheless, happy is he who finds he is called upon to fill a window in a large church which is more than amply provided with light; and this restriction being removed, he may indulge himself to the utmost in the glories and fascination of colour.



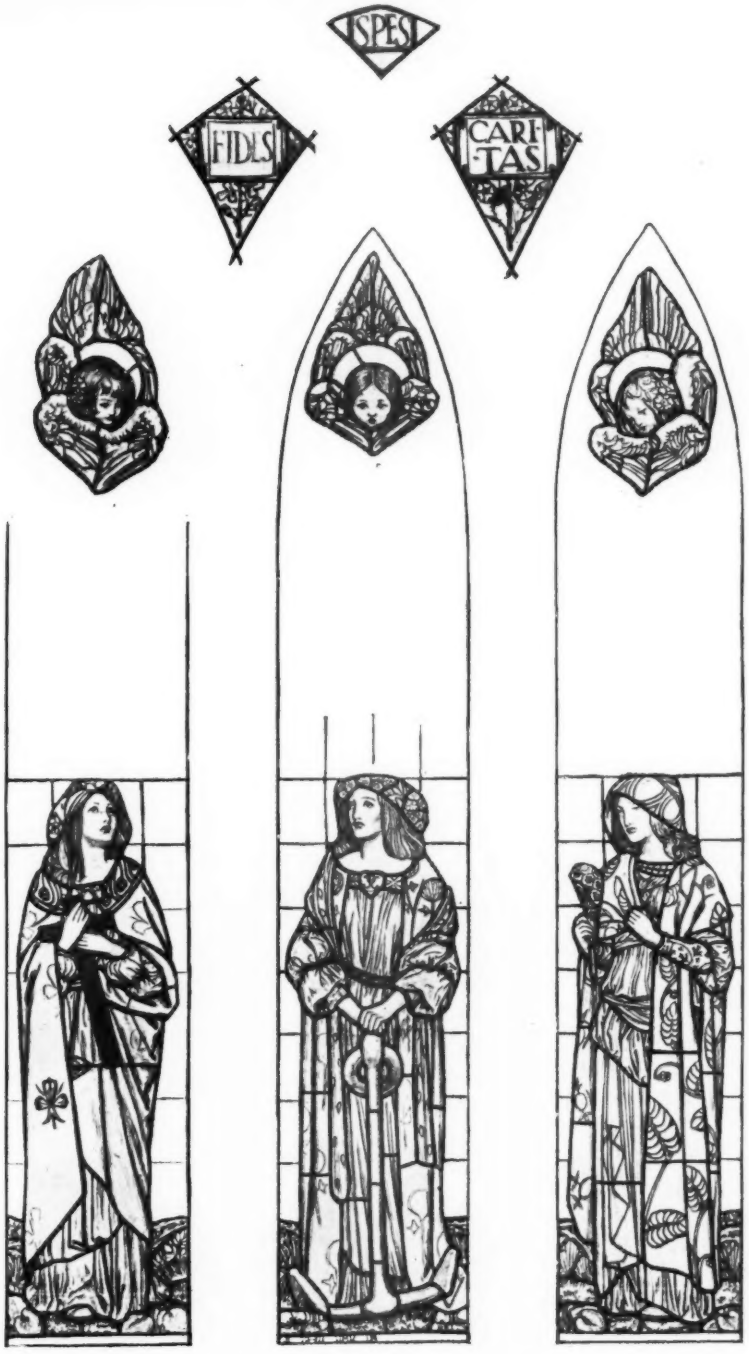
CARTOONS OF SUBJECTS FOR A STAINED-GLASS WINDOW BY MR. E. ARMSTRONG BELL.
(Lower part of centre drawing unfinished.)

The cartoon being ready, the first step to take is to make an outline drawing representing the shapes of the pieces of glass to be cut, which is obtained by placing glazed linen over the drawing and tracing a clear black line, indicating the thickness of the heart of the lead eventually used in putting the window together: this is called a "cut-line," as from it the glass is cut. While making this skeleton drawing, opportunity should be taken to alter and simplify the shapes where necessary for greater ease in cutting.

In starting to choose the glass it should be borne in mind that colour is the most important thing in a window; in fact, one poor in design but of colour well chosen and modestly painted may be interesting, and even beautiful. On the contrary, a window, however well designed, and no matter how well painted (the more carefully the worse), but with bad colouring, is intolerable; so one may safely say that at this period is reached the most interesting and perhaps absorbing stage in the making of a stained-glass window.

The selecting of suitable glass is no easy task, for if shirked and even one makeshift piece of colour allowed to pass, that piece, unless ejected, haunts one to the end, till at last it has to be cast aside, perhaps when time has been expended upon it in painting. More may be done than may generally be thought with a scheme of colour, which, although apparently satisfactory, still does not quite please, by introducing glasses of varying textures and density. Thus a bright, somewhat clear glass of exactly the colour required, and yet too powerful for the others, if replaced by one with irregularities of surface and of a horny texture, might be found to be more concordant. For instance, such a glass as that beautiful cool bright green (an intensified sea-green), if smooth and lacking in quality, is almost useless; also the colour known as "gold pink"—a flashed glass, a production of the sixteenth century, which therefore did not occur in early work when glass was imperfectly made—if on a base of smooth white glass, is most objectionable, but if on a varied yellowish tint of a certain density, becomes (although a colour to be sparingly used) a glass of great beauty. Softer tones of green, and also ruby, velvety in appearance, may be found to gain greater value arranged with others differing in quality. Again, tones of white often admit too much light, tempting one to alter their lack of density by means of acid, suggested by the somewhat milky appearance which exists in old windows. As any reliance upon the alteration of tones by subduing afterwards when painting being seldom satisfactory, no time is lost in searching for the exact quality of glass of the colour required, so that each piece may be in correct relationship one to the other. No attempt should be made to paint the details of the design, which, it should be understood, only go to finish the work practically completed (at any rate as regards the main colouring), until the glass is finally deemed to be satisfactorily chosen; in fact, the aim of the artist from first to last should be, to quote the words of Ruskin, "Paint with glass, not on glass," and as far as possible consider it no time wasted which is spent in bringing the glass as near to the point of effect required before starting the painting.

There is a practice I wish to refer to which has now been in vogue for some few years; that is, of superimposing pieces of glass held together in one lead in two or even three layers—called "plating"—brought about by a desire on the part of the colourist for tones and qualities of glass unable to be provided him by the maker; and also to make it possible to use a glass, often most delightful, but of such a nature that to fire it would destroy its natural beauty. So a piece of white glass is painted upon instead, and leaded up with the coloured piece. Although no doubt these methods are quite legitimate, I do not feel they are altogether satisfactory. There is perhaps no artist or craftsman worthy of the name, who, if asked, would not tell you that of course he hoped his work would in years to come, in the natural event of its requiring to be remade, be considered worthy; then why use such methods in



CARTOONS FOR STAINED-GLASS WINDOWS BY MR. R. ANNING BELL.

obtaining effects that would render it practically impossible for such to be done by any other than the maker? Picture to yourself the hopeless muddle in which the glazier of two centuries hence would become involved in trying to put together a window made up of pieces of glass leaded together in layers of two or three thicknesses which required releading, even if none were missing or even broken. It is nevertheless occasionally a useful expedient, but one which in my opinion should not be resorted to until every resource has been exhausted to obtain the required colour or tone.

As regards the different opinions as to the best tint of white glass, I do not think one can go wrong in using one of a tint often found in early glass; I mean of a cool greenish hue. One so often sees stained-glass windows by different makers sometimes side by side in cathedral or church, even in company with old examples, which jar by their great contrast of tone. I could give instances where the pervading tone of one would be a warm yellowish green, and the other of a pure crystal white (which seldom looks silvery), both perhaps beautiful in themselves if not seen together. In almost all the old glass that I have seen, the whites seem cool without being cold, with the beautiful mellow tone imparted by age, which tells for warmth, but is not sickly; the light which comes from such windows is so soft and pure, it in no way destroys the beautiful grey gloom which adds such a charm to a big interior; the yellowish glass entirely destroys this, lighting the architecture up with a sickly hue which is most unsympathetic.

Although there are many ways of going to work in painting glass I will content myself with explaining one. Upon a sheet of plate glass (which fits the frame of the painter's easel) are traced off with fine lines all the important details from the cartoon of that section of the light to be painted; the cartoon is then removed from under the glass, and in its place is put the cut-line, taking care to have it in the exact position of the cartoon just removed. All the different pieces of glass are then placed together in their position on the plate by the guidance of the outline beneath, a process resembling the putting together of a Chinese puzzle. Each piece of glass is then made fast to the plate by dropping small spots of melted wax at intervals round the edge of each. It may now be raised to a vertical position on the easel-frame, which by means of counterbalancing weights can be raised up and down as required.

The artist has now the opportunity of seeing for the first time the glass that he has chosen, in a position against the light, as it will be in the window when finished; and now before any of the coloured glass is painted is the time to make any alteration desired. This opportunity to view the glass before painting is of the utmost importance, because if the corrections are not made now before the work is painted, any offending pieces will be more reluctantly discarded at a later period. I mention this more particularly, as it is the practice of a great many workers never to see these pieces of glass in their relative position until the window is leaded up; the flesh is painted by one, the draperies by another, the background and details perhaps by a third. They say that through continued experience they know exactly the effect they want and how to get it, and never see the result until it is fired and leaded up. Now it is almost impossible for any work of true merit to be produced in this manner: there are very few, I should imagine, who can be so far-seeing as to be able to judge of a result in this way, except, of course, they are content to repeat some scheme of colouring which they have already frequently done.

The whole making of a stained-glass window should be one of elimination, adding to, and correction, not only in the initial stage of the glass in its raw state, but as the work proceeds, altering the work to obtain the effect aimed at as it progresses. In the process of painting and in fact at no period should anything be taken for granted; but viewed in a perpendicular

CARTOONS FOR WINDOW BY MR. R. ANNING BELL.

position, and from as great a distance in the studio as possible, and no advance made until at each and every stage nothing suggests itself that could possibly be improved upon.

That any system should be adopted that would obviate this apparently waste-of-time way of going to work proves the fact that the worker is repeating in the dark one or more formulas (at which he has arrived and satisfied himself) over and over again; from such method nothing but a deadly monotony must result. I maintain that when the plain glass is offered up in position and found to be unsatisfactory is the very point of its salvation, because it would bring into activity the artist's keener sense of colour demanded by the problem to solve, and the opportunity given would possibly result in some happy combination as regards colour, tone, and balance which it would be impossible to obtain otherwise; or one note of colour alone might be found to bring into harmony and correct an uninteresting piece of colouring.

I will now assume the glass finally selected is as nearly perfect as possible; the painter then—by the fine lines previously mentioned, just visible through the coloured pieces of glass, and from the cartoon hung at a convenient distance—proceeds to reproduce all that is required in outline. At this point it becomes necessary to decide whether the outline shall be fired on to the glass before proceeding with the painting or not. Much depends on the size and height it is intended to occupy; it is, however, not imperative. I prefer not; the outline can be more easily modified, strengthening or removing where necessary as the process of shading proceeds. Over the glass which is outlined a "matt" of colour is worked and manipulated in such a way that when rubbed by the hand and by using various brushes, mostly hog-hair, technically called "scrubs," the colour is carefully brushed away where high lights are required, leaving it more or less as applied, to represent the shadows. With skill acquired by practice this process may be repeated two or three times, until the depth in the modelling required is obtained.

If, now that the shading is finished, and the glass in its altered appearance does not suggest any alteration in colour, either lighter or darker, it is ready for the kiln. The plate is removed from the easel, and the pieces of glass by gently tapping are detached and carefully placed in trays to await firing. I should perhaps have mentioned before something about the pigment used for painting on the glass, which should be thoroughly understood to mean simply the adding of non-transparent enamel by way of shading to modify the colour and to produce those forms in the design unable to be obtained by the leads. The pigments are in the form of powders, and are obtained from the oxides of various minerals—the most permanent and more generally in use—of iron; these colours, upon being fired, vitrify and become part and parcel of the surface of the glass. The mediums used in working these are gum or sugar, with water, and oil of turpentine or of tar when painting in oil.

After the work has been fired for the paint, it will be necessary to fire it a second time for the yellow stain, as the heat required for the former would be too great to produce the clear rich and pale yellows so characteristic of fourteenth and fifteenth century stained glass. This yellow is obtained by oxide of silver, and is applied to the back of the glass, where, it has been previously decided in working out the scheme of colour, should be yellow produced in this way. In this second firing the opportunity may be taken of touching up any defects or scratches that may have occurred, and any slight strengthening of the shading where it may appear desirable.

The application of the silver is called "staining," because it actually stains the glass below the surface, and whereas the pigment used for shading simply becomes more or less attached to the surface, the chemical action of the former literally alters the colour of the glass, and can only be removed by the application of fluoric acid, which bites or eats away the glass. I may say here that this acid is used in lightening or etching out patterns on flashed glasses,

previously referred to, in which the colouring is only a thin film upon white glass which can easily be removed. In old stained glass, before the use of acid, this result was obtained by abrasion, or grinding away of the colour, leaving the pure white or any tint upon which it is flashed.

The glass fired now for the second time is ready to be leaded up; the cut-line placed upon the glazing table, the pieces of glass sorted out, put together in their position upon it, is ready for the glazier.

The lead used should be pure, and melted at a low temperature, and all dross carefully removed before making the castings from which the lengths of glazing lead called "calms" are made. These are in section like the letter H, and are of different sizes, much effect being obtained by judiciously varying these sizes in bringing into prominence certain features which it is wished to emphasize. The glazier works these leads round each piece of glass, keeping the whole tightly together as he goes along, following the cut-line, eventually soldering the joints, which connects the whole.

The glass with all its lead lines added now presents quite a different appearance, and more than likely may still require alteration, which should be made previously to the soldering of the joints on the back of the light, as the pieces are more easily removed and reinserted at this stage. There is nothing now left to be done except "cementing" and "banding," the former the filling in of all the interstices between lead and glass with putty, or a cement made from whiting, boiled oil, red lead, and "turps" darkened with lamp black, rubbed in with a brush, making the window watertight; and the latter that of soldering on pieces of copper wire to fasten the lights to the metal bars when fixing into the stonework.

It has possibly struck others as it often has myself on reading a report of the unveiling of a stained-glass window that all the windows ever done are either handsome or beautiful; sometimes both: the former may be true, but one has frequent evidence that the latter is open to doubt. One sees many that are refined and dignified both in design and in colour, but there are others—not things of beauty. I have often wondered that some one having to gaze continually on such has not been goaded into starting a society for the prevention of stained glass being put in churches. Better the plain diamond panes, often beautiful tones, mellowed by age, than discordant arrangements of coloured glass.

In conclusion, with regard to the history of stained glass, I have neither time nor had I intention of saying anything. May I, however, refer those who wish to make a study of this to the works of Winston, also to Mr. Westlake's *History of Design in Painted Glass*, a life-work of patience compiled with such loving care, inexhaustibly rich in facts and illustrations—the classic on stained glass. To *Windows* by Mr. Lewis F. Day, a delightful work; I will quote its prefatory note: "To those who know nothing of stained glass; to those who know something and want to know more; to those who know all about it, and yet may care to know what another may have to say upon the subject, I dedicate this book." And Mr. Whall's most interesting contribution to the "Artistic Craft Series" I can recommend with nothing but praise to any who wish to become more minutely intimate with the details of this craft.

DISCUSSION OF THE FOREGOING PAPER.

The President, Mr. JOHN BELCHER, A.R.A., in the Chair.

Mr. J. D. CRACE [*H.A.*] said it was with great pleasure that he rose to propose a vote of thanks for such interesting and valuable Papers. Mr. Dix had done valuable service in bringing before them in so conspicuous a manner the action of the atmosphere and rain upon old glass. He did not think anyone could realise the great extent to which the original surface had changed its temper by corrosion. Of course the admixture of black—for that was practically what it came to—had a wonderful effect in toning and harmonising colours. Although he quite agreed with Mr. Dix that no amount of weather would make a bad window a good one, there was no doubt that the action of time had a very kindly effect on the harmony of colour. One point he hoped to have heard touched upon was the great importance in stained glass of producing what was generally known among painters as the palpitation of colour by varying the depth of the pieces of colour used in any one mass. There was no doubt that a great deal of that jewel-like effect which was produced in the best windows was the result of carefully varying the amount of power in the colour presented both in the one mass and in those pieces which surrounded it below and above. The art of putting colour together in glass windows was a sort of special art, inasmuch as one had to deal with colour on a much more intense and pure scale than in almost any other branch of art. A painter of course toned his colours as he went on, and never under any circumstances produced the brilliancy which even a moderately brilliant-painted window would produce. The fact that glass was so brilliant, and the mere beauty produced by brilliancy, constituted almost a sort of standing danger to the man who had not made it his special study. One point of great value to those who were interested in and wished to influence the colouring of windows being executed for them was to have the glass when selected arranged at the cutter's on a plate-glass screen. It was a most useful and necessary thing. It was necessary for the artist engaged on the work, and very advantageous to anyone concerned in responsibility for the production of a good window. It enabled, at any rate in the first instance, the greatest slips of judgment in the choice of glass to be corrected before too much labour had been expended upon the work; and it undoubtedly had the effect of obliging the artist to criticise his work in its crudest form, and therefore enabled him to make his corrections on a broader scale than afterwards. He supposed very few men who really cared about their work could finish a window, even after it was leaded, without wishing to change a few portions of the glass. He should certainly recommend anyone who was interested in windows to look the glass carefully over against a light as nearly as possible like that to which it would be exposed before it was finally cemented at any rate, and, if possible, before the soldering was carried to a finish. Those final inspections very often saved a great deal of trouble and vexation afterwards. He was glad to hear Mr. Gascoyne allude to the Florence windows. He did not think that until recent years either architects or glass-stainers had half realised the value of the lessons to be learned from Italian glass—or, he should say, from glass in Italy, for there was a great deal of beautiful glass in Italy which undoubtedly was produced by skilled Frenchmen and brought there. At Florence and at Siena there was a great deal of glass, and there were beautiful windows designed by Ghiberti, as well as by one of the Ghirlandajos. He could only say to any young architect who might be going to Italy for other purposes, that any time he could spend on the stained glass which he would find there in such large quantities would be time well spent, if he devoted it to the study of the glass.*

MR. G. H. FELLOWES PRYNNE [*F.*] said that Mr. Dix seemed to think that some of them had reason to wish that glass-stainers did not exist at all. With regard to some of their churches, it was no doubt true that they had been ruined by restoration, but a majority had been ruined by the bad glass put in. Artists could do really good work now as in the past, especially in church work, but if they worked harmoniously with the architect, the effect generally would be far better. It was the want of touch between the artist in painting and the architect that was so often felt in our churches. They found that after the church had left the hands of the architect, one glass painter was put on, and then another; and there was a sort of running competition going on round the church. There was no unanimity, no unity of effect at all by such method, or rather want of method. Glass painters must feel that themselves. Mr. Dix said that where he had an opportunity to put in a very elaborately coloured window, it was a great opportunity. He was not quite so sure of

* Lippo Lippi and Pierino del Vaga were also among those who designed stained-glass windows. The stained glass seems to have been extensively made by Domenico Vivi, of Gambassi.—J. D. C.

that. If the artist made too much of the single opportunity, it might be very disadvantageous to the other glass in the church and to the general harmony of effect. He was sure that Mr. Dix would agree in the view that the church, or the building which he was decorating with glass, must be considered as a whole; and that where he got brilliant lights, as he would from the east, it was a great mistake to overdo the white glass. The glass used as a background must be toned to a very great degree. Green glass, it was true, had been exaggerated; but he was not quite sure that it had not been exaggerated in the right direction. White always exaggerated itself. If a piece of white glass were put next to a piece of red, the red must necessarily look smaller. White seemed to take away from the surrounding colour, so that very little pure white could be used advantageously with stained glass. It must be modified with a very distinct tone, either warm yellow or green. With regard to the cartoons Mr. Gascoyne had set before them, it would have been better if the lines of the supporting bars or saddle-bars had been shown. One was apt to be misled by cartoons. The lines cut sometimes very awkward places, and it was advisable that in the cartoons and drawings they should be shown just as much as the leaded parts should be shown, because they become a very important feature in arranging the design. They were necessary supporting fixtures for the glass. No doubt some present had been to a place called Huy, in Belgium, where they must have been struck with the long narrow windows, with a single mullion running down the whole way—double windows, in fact. The effect was magnificent, not so much in the actual window glass design as in the colour introduced. The glass itself was not particularly good; but age had acted upon it to a certain extent, and the effect of the mass of colour, the narrow lines of colour leading up into the groyne, was perfectly sublime. He fully agreed with Mr. Gascoyne in his idea of the artist entering into the symbolic feeling of what he was designing: it was absolutely essential. The absence of that devotional feeling in the artist (he was, perhaps, speaking rather too much of church work, but it applied more to church work than to other kinds of work) would be perfectly evident in his work. One saw the mannerisms of this or that stained-glass artist standing out in his window, rather than the devotional or poetic effect he should try to get into it. Some artists laid down a definite rule that they would not treat single lights with anything but single figures. He sympathised with them to a very great extent, especially when clients demanded a "set scene" or some other elaborate subject to be got into a space of some 9 or 10 inches; that was hopeless with glass, generally speaking, and there was much to be said for the single-figure rule. But it could be carried too far. There should be some story, some lesson told in the glass—historical, or devotional, or religious, or whatever it may be. If there were to be a single figure it was very useful to have depicted some sort of scene from the life of the individual, as so often was done in the fifteenth century; for instance, his martyrdom or some leading event of his or her life depicted below on a smaller scale. Very often it added interest to the ordinary beholder to have a little inscription giving the name or something like that. That, of course, was wholly independent of the scheme of colour that one should endeavour to carry through in stained glass. He agreed with Mr. Gascoyne that the more the real feeling of the artist (that real devotional feeling—he used the word with all sincerity) was thrown into the work, the better would be the result. It was so with artists, and with architects, and it was the same with the glass painter. He had very much pleasure in seconding the vote of thanks.

Mr. GEORGE HUBBARD, F.S.A. [*F.*], said that it had occurred to him that if in glass painting more white were introduced there would be a better power of judging of the respective values of the various coloured glass employed. The value or intensity of any colour could only be compared with white; white, in fact, was the standard by which the value of any colour could be appreciated. For instance, it is impossible to compare the value of red with blue, yet it is possible to compare either with the common standard of white. In stained-glass windows it would not be advisable to have the dazzling transparency of clear glass, as this would have a dazzling effect and prevent the appreciation of any colour. When he was at Chartres some time ago he was extremely struck with the beauty and richness of the glass in the Cathedral; he had an opportunity not only of viewing the effect of the glass as seen from the interior of the Cathedral, but he examined the glass on the outside by getting on to the roof. To his surprise he found that the glass had the appearance of being washed over with a thin coat of cement, and it occurred to him that perhaps the rich effect of the colouring was due to some such wash.

Mr. C. HARRISON TOWNSEND [*F.*] said that one almost anticipated that an English stained-glass designer would approach the subject of the American system of the superimposed glass from the point of view taken by Mr. Dix; that is to say, though admitting it produced certain beautiful effects, he would hold that it was not an entirely legitimate method, or one in which he (Mr. Dix) himself would care to work in his craft. He left the matter exactly at that point. If he made any remarks later on, perhaps he would be good enough to explain why it was a particular offence to produce by the means of glass, whether superimposed or single, the best effect one could, and why one should hesitate to use the double thicknesses if

one expected in that way to gain in colour-effect and value.

MR. E. W. HUDSON [*A.*] said that with regard to the disfigurement of saddle-bars coming across the design, was it not the fact that at the present time "cames" were made so stiffened that it was unnecessary to introduce the cross-lines, which naturally would be a disfigurement? In large windows with broad "cames" it was the custom, he believed, to adapt the bars to the shape of the principal lines. With regard to the legitimacy of the use of superimposed glass, it was the fact that there were purpose-made grades of thickness; and not only that, but grades of density of colour in the same glass; so that one could, from a single sheet, select graded and streaky colour, which would give very much better effect than superimposed glass. They must all have been struck with the beauty of the drawing of the cartoons, and also with the executed glass exhibited, and it must be supposed that these were all intended to be viewed from a very close point; but with regard to glass for use at a great height he supposed there was nothing in the cartoons showing the extra strength of lines adapted for a height of, say, thirty or forty feet. He was much struck many years ago with painted glass in the abbey church of St. Denis. He thought then, looking at it from the ground, what a magnificent general effect was produced; but when, some years later, he inspected it through a strong glass, he thought he had never seen more dreadful instances of drawing representing the human form divine.

THE PRESIDENT said they had heard something of the true artistic methods of dealing with stained glass, and they had had many interesting points raised in the discussion, which he should leave to the readers of the Papers to answer. One or two points had occurred to him in listening. It was important, as Mr. Gascoyne pointed out, that in church windows there should be a strong devotional feeling in the work. By that he meant also that there should be no disturbing element in them; that anything that seemed to suggest a problem to be solved was a mistake in a place of worship. The mind would be immediately occupied in trying to solve the mysteries represented, instead of being soothed and quieted and impressed by the beauty and quietness and stillness of the windows. Mr. Gascoyne also mentioned another matter which was important, viz. that the building should be seen first before designing the glass. He (the President) could speak from experience on that matter. It was very important, because if the stained-glass designer had no idea of the aspect, or position, or the height of the window from the ground he could not, by any possibility, design his window suitably for that position and place in the building. The experience he referred to was in the case of where some stained-glass windows were wanted for a staircase which was abundantly lighted, but chiefly from the skylights above. The windows in question were some 10 feet from another building, so there was no direct light upon them. There was a competition with regard to these windows—he himself knew nothing about it at the time—but several eminent artists were requested to send in designs. As Mr. Dix had pointed out, competitions of designs in stained-glass windows are a delusion and a snare, and it proved to be so in this case. It so happened that the Committee, attracted perhaps by the deepest and most fully coloured drawing with the largest amount of detail in it, selected that particular design. It happened that the artist had never seen the building, and had taken no particulars even of the size of the opening. When the window was sent down completed it was at least fifteen inches too short, and a patch had to be added to begin with. The effect was disastrous. His work was entirely thrown away, and the Committee then called him (Mr. Belcher) to know what could be done. The artist himself attended and said that the architect had really supplied too much light on the staircase; that it should be at once all shut out, and then something of the colour of his window would be seen; and it might be as well to supplement this by putting electric light outside the glass! Hence it was that the whole intention was spoilt; and he hoped eventually to have the stained-glass windows removed and proper windows put in. He might relate another experience. He was afraid that when he was young he imagined that he could design stained glass, and, in fact, do everything that was necessary in a building. He tried to do it all himself. He also designed some stained-glass windows. He was glad to say he had since removed them. He had forgotten that in a narrow building where these windows were placed at a great height some allowance must be made for foreshortening and so on. The figures turned out a dreadful failure. As Mr. Dix had mentioned, it is important that the question of scale should be considered. Examining the building and noting its scale, and the general disposition of its parts, should guide one in the scale of its figures, and where they are to be introduced in a stained-glass window. The history of stained glass had not been much gone into. Unless he had mistaken the reader's intention, it had been hinted that the fifteenth-century glass was that which they should endeavour to copy. He felt very strongly that they should endeavour, if possible, to design all their work in the twentieth-century style, and that they should avoid, as far as possible, mere imitations, which, after all, were only gigantic frauds. If they could develop the beauty and value of stained glass by all means let them do it, and adopt every method and every expedient that came to hand with a view to its development. They

must also endeavour to make it suitable to the position it was to occupy.

MR. ALEXANDER GASCOYNE, in responding to the vote of thanks, said that with regard to the old glass at Chartres he did not think the outside was cement-washed, as Mr. Hubbard appeared to think. It was no doubt the effect of age. He had examined several of the old windows in Cologne Cathedral, and the same effect was to be seen there. Little pits could be seen going right into the glass, and it looked something like cement wash, but it was not that at all. With regard to the cartoons on the walls, they were all designed for windows to be placed within 12 feet from the floor line. With regard to the work at Florence, one light was in the Duomo Museum at the back, where it could be examined at close quarters. The difference that the distance gave was astonishing. One could not describe the gorgeous effect in the cathedral which the light gave to those various pieces, and the way in which the robes, when they were red, were made up of the various pieces Mr. Crace had mentioned. If a robe were in blue there was a wonderful range of colour running from one blue to another which gave a brilliance and, at that height, a grand result.

MR. ARTHUR J. DIX said he had been asked to give a reason for his objection to superimposed glazing. He thought he had given a very strong reason—perhaps his principal reason—in reading his Paper. Other than this he could only say as the Westminster boy did of his master, Dr. Fell: "I do not love thee, Dr. Fell, The reason why I cannot tell." He simply did not like the process, and, moreover, did not consider it playing the game. With all the beautiful glasses now made, if a craftsman could not get with one layer of glass the effect he wanted in his window, it had better be left alone. He had seen windows all eaten into by the atmosphere, and almost crumbling away, that needed to be put between two pieces of sheet glass and leaded together to protect them, as at York. If their windows were to remain to that stage it would be impossible in the case of superimposed glasses for the glazier to put them together.

A MEMBER: Would there not be a possibility of mildew between the superimposed glasses?

MR. DIX: Yes; there was that objection, and a very important one too. In reply to the question put by a member with reference to the effect of cement wash noticed on the back of old windows, it was entirely due to decay through the action of the atmosphere, giving the glass all the appearance of being washed over with cement. It could not be rubbed off, and if it were wetted it returned again when dry, and it so refracted the rays of light coming through the glass that it altered the translucent nature of the material. A piece of glass could sometimes be taken from an old window and almost crumbled to powder in the hands when it had reached a further stage of decomposition.

9, CONDUIT STREET, LONDON, W., 23*rd Dec.* 1905.

CHRONICLE.

The Illustrations to the Papers on Stained Glass.

The Papers on Stained Glass which engaged the attention of the General Meeting last Monday were accompanied by a number of exceedingly interesting illustrations, comprising materials ancient and modern, drawings and cartoons, and the actual two-light window itself of which a photographic reproduction is given on page 95.

Mr. Gascoyne showed several of his own designs, including drawings of St. George and St. Ludmilla, prepared as cartoons for his memorial window to the late W. L. Huskinson, Esq., for the parish church of Epperstone, Notts, and the St. Anna cartoon for a single window recently executed for the Lady Chapel, St. Hugh's, Lincoln. Cartoons of a female figure, and another representing "Charity," illustrated suggestions for the treatment of staircase windows where light is required, and some heraldic cartoons were shown designed for the upper lights of vestibules and corridors. One of these was a drawing for a banneret, a mark of distinction of olden days which it is understood His Majesty King Edward contemplates reviving. A number of smaller sketches by Mr. Gascoyne recently exhibited at the Royal Academy were shown, one of them representing St. Augustine, first Archbishop of Canterbury, in full pontificals.

Of the lantern illustrations shown by Mr. Dix, the first few were intended to demonstrate the effect of age on stained glass, two being photos of windows of French glass of the fourteenth century, one of them an example of the deplorable practice of "restoring," the other only "mended"—the form of preservation so rightly advocated by Mr. Dix. Several fragments of the actual glass from old windows made into slides, contrasted with modern pieces matched in colour or tint, demonstrated in a forcible way the change the glass had undergone by exposure for ages to the atmosphere. Slides were shown also of two windows by Mr. Dix, namely, the Clerk-Maxwell Memorial, Corsock, Dumfriesshire, and the west window, Haughton Church, Stafford; also of the great window, designed by Mr. T. R. Spence, in the Mitchell Hall,

Marischal College, Aberdeen. These were followed by several slides from cartoons by Mr. R. Anning Bell.

Special Election to Fellowship.

The Council at their meeting on Monday the 18th inst. unanimously elected to Fellowship, under the proviso to By-law 9, Mr. ARTHUR POLLARD, *President of the York Architectural Society*, of 1 Burton Stone Lane, York.

Seventh International Congress of Architects, London, 1906.

The railway companies of the United Kingdom have consented to issue return tickets to London, available from the 11th to the 25th July inclusive, at the rate of a single fare and a quarter, to members of the Congress. Negotiations are in progress with the railway authorities abroad with a view to an abatement of the ordinary fares for the benefit of foreign members of the Congress.

An exhibition organised by the Executive Committee is to be held in connection with the Congress. The chief features will be :—

(1) A Chronological Exhibition of English Architecture from the Norman Conquest (1066) to the death of Sir Charles Barry (1860).
(2) Oil Paintings and Water Colour Drawings of English Architecture.
(3) English Furniture and Silver Work.

Milan Exhibition : Competition for Designs for Workmen's Dwellings.

Clause 1.—The Committee for the Milan Exhibition 1906, in conformity with the proposals of the Commission for the Social Economy Section, institutes a competition for designs of workmen's dwellings suitable to the conditions of Northern Italy.

Clause 2.—The competition is international. The subject of the competition should be treated under technical, hygienic, and economic aspects. The plans approved by the Commission organising the competition will be exhibited in the buildings of the Social Economy Section so far as space will allow.

Clause 3.—The competition comprises three categories :—

1. Designs for separate houses or blocks of houses for workmen's dwellings suitable to large towns.

2. Designs of houses or blocks of houses for workmen's dwellings suitable to small towns.

3. Designs for houses or blocks of houses for workmen's dwellings suitable for the families of working men employed in isolated factories.

Clause 4.—The separate houses or blocks of houses should be adapted to small as well as large families, and should comprise dwellings having respectively one, two, three, and in some cases four rooms. Competitors must study the hygienic, economic, and social requirements of the population for whom they are intended, and must take care to provide for these requirements generally throughout the buildings so far as may be compatible with the conditions of cheapness with which they have to comply.

Clause 5.—Competitors may compete in more than one of the categories above mentioned.

Clause 6.—Competitors in the first and second categories must assume that they have at their disposal a clear rectangular space surrounded by four streets, which are arranged in the best possible way to serve the space in question. Competitors in the third category are quite free to select for themselves the shape and other conditions of the space they deal with. In every category they must assume that the necessary water-supply per head, electricity, gas, and drainage facilities on the *tout à l'égout* system, are available. Competitors in the second and third categories must provide for the case where no sewage accommodation is available, and point out the way of meeting the difficulty.

Clause 7.—Competitors should take into consideration all the rules laid down in the Italian Artisans' Housing Bill of 24th April 1904 (N. 164).

Clause 8.—Every scheme must provide for the housing of 200 families, representing an aggregate of 700 persons.

Clause 9.—The cost of the sites (per sq. metre) is assumed to be :

Frs. 10 in the first category (6*s*. 6½*d*. per sq. yd.).

Frs. 5 in the second category (3*s*. 3¼*d*. per sq. yd.).

Fr. 1.50 in the third category (1*s*. per sq. yd.).

Clause 10.—Competitors must submit :

(*a*) A block plan of their scheme to the scale 1/500.

(*b*) Plans, elevations, and sections of said scheme, so that it may be complete in all essential parts, to the scale of 1/100, and particulars of the most essential structural details to the scale of 1/20. Where a general design for proposed buildings is composed of several identical units, the drawings may deal with one portion only.

(*c*) The metrical quantities of the proposed works.

(*d*) Estimate of cost calculated on the aforesaid figures for sites, and on the basis of the prices contained in the standard schedule of prices for the buildings in the commune of Milan for the years 1903–1905, with a rebate of 15 per cent., and on those commonly current in Milan for work not covered by said schedule of prices.

For every block of buildings the following information must also be given :—

Price per sq. metre of the gross area of site covered.

Price per sq. metre of the whole of the stories added together.

Price per cubic metre measured from the ground level to the upper level of the top ceiling.

Price per head which the building is designed to accommodate.

(*e*) A report in which shall be fully set forth all proposals of a technical, hygienic, and social character which have been adopted in the preparation of the designs.

(*f*) A report describing the financial and administrative data for the execution and working of the scheme.

Clause 11.—There will be two prizes in each category, viz. one prize of Frs. 6,000 (£240); one prize of Frs. 2,000 (£80).

An international jury, whose decisions shall be final, will be appointed by the Milan Exhibition Executive Committee to award the prizes.

Clause 12.—An entrance fee of Frs. 20 will be charged, payable before 15th February 1906, to the Exhibition Committee.

Clause 13.—Designs must be forwarded to the Exhibition Committee before 31st March 1906. The date of posting of those designs which may not have reached the Committee by that date must be certified by documentary evidence.

Clause 14.—The schemes may bear either the signature of their authors or a motto, which should also appear on the superscription of an envelope containing the name and address of the competitor. This envelope will remain unopened if the design does not receive a prize.

Clause 15.—The schemes sent in as above must be withdrawn by their senders one month before the close of the Exhibition; if not claimed by that time they will be treated as the property of the Exhibition Committee.

Clause 16.—The Committee reserves the right of publishing the designs thus sent in, artistic and other rights being reserved to their authors.

The Hon. British Commissioner for the Milan Exhibition is Mr. Arthur Serena, 1 and 2 Oxford Court, Cannon Street, E.C.

Architects' Benevolent Society.

In the list of contributors to the Architects' Benevolent Society which appeared in the last issue of the JOURNAL the names of Mr. Banister F. Fletcher and Mr. J. T. Cackett should have been included as the donors of £5 5*s.* each. Other contributions which have since been received are :—

	Donations £ *s.* *d.*	Subscriptions £. *s.* *d.*
Mr. G. T. Hine . . .	15 0 0	
Mr. William H. Burt . .	1 1 0	
Mr. Henry Tanner, jun. . .		1 1 0
Messrs. Scorer & Gamble .		1 1 0
Mr. C. Forster Hayward: Bequest	21 0 0	
Mr. Edward W. Allfrey . .	5 5 0	

Mr. F. W. Hunt has promised £20 in support of Mr. Glover's offer of £50, subject to the sum of £450 being raised.

Honours and Appointments.

LORD WINDSOR [*H.A.*], late First Commissioner of His Majesty's Works and Public Buildings, has been created a Viscount and an Earl of the United Kingdom under the title of Viscount Windsor and Earl of Plymouth.

Mr. R. PHENÉ SPIERS, F.S.A. [*F.*], has been elected a Corresponding Member of the Institut de France in place of the late Mr. Alfred Waterhouse.

Mr. FRANCIS BOND, M.A. [*H.A.*], has been made a Foreign Member of the Société Française d'Archéologie in recognition of his recent work on *Gothic Architecture in England*.

The late Mr. H. H. Collins [*F.*].

Mr. Henry Hyman Collins, who died on the 13th inst. in his seventy-third year, was elected Associate of the Institute in 1859, and proceeded to the Fellowship in 1877. He was District Surveyor for the eastern division of the City of London, and had a large practice as an architect, his buildings including numerous City offices and warehouses, and large mansions. He was connected with a number of Jewish institutions, and had carried out various synagogues and public buildings for the Jewish body, the most noteworthy being the new building of the Home and Hospital for Jewish Incurables at Tottenham, which he erected in conjunction with his son and partner, Mr. Marcus Collins. He was the architect, selected in competition, for the new Lying-in Hospital for Women in City Road. Callis Court, a mansion at Broadstairs, is one of his buildings. At the General Meeting of the Institute last Monday, the Hon. Secretary, Mr. Alex. Graham, F.S.A., in formally making the announcement of his death, said that Mr. Collins had come before them professionally in many ways, especially in his capacity as district surveyor, and there were few architects who were not acquainted with him. He was a familiar figure to all of them, and they much regretted that he had passed away. But he had left a good name amongst them. In years gone by he had taken an active part in the work of the Institute, and had always been an ardent supporter of their best interests. In conclusion, the Hon. Secretary moved, and it was resolved, that a letter of condolence be sent to his bereaved family expressing the sympathy of members, and at the same time their full appreciation of his merits and his work.

The late Mr. W. Moss Settle [*A.*].

Mr. William Moss Settle, architect, of Ulverston and Barrow, died on the 13th inst. at the age of twenty-nine. He passed the Intermediate Examination of the Institute in 1896, and was elected Associate in 1899. He was in practice at Barrow, where he had designed and carried out a number of buildings, and was architect to the Walney Estates Company.

LORD BACON'S "PERFECT PALACE."

THE approaching exhibition of designs and drawings submitted for the Prizes and Studentships in the gift of the Institute has possibilities of exceptional interest in view of the subject chosen this year for the Soane Medallion and £100. The prize is to be awarded for the best realisation of the ideal mansion described in Bacon's Essay "Of Building," beginning at the words, "First therefore, I say, you cannot have a perfect palace, except you have two several sides," &c. The whole plan is to be 400 feet from front to back, with entrance in the centre of the front block; the length of the front block facing the forecourts is left optional; but the general disposition of the plan, as indicated in the Essay, is to be followed. Among the drawings required is a block plan to a scale of $\frac{1}{32}$ inch to the foot, showing the three successive forecourts described by Bacon and the position of the offices standing at a distance, with galleries of approach, as described in the last sentence of the Essay. The style is left entirely optional. The Exhibition opens to the public on the 23rd prox. Meanwhile the Essay itself will be useful to refer to, and it is thought advisable to print it here in full, that members may be in a position to appreciate the task competitors have had set them, and to follow with intelligence their various renderings of a "perfect palace." The Essay, which follows, is taken from the ten-volume edition of *The Works of Francis Bacon*, published in 1802, kindly lent for the purpose by the Hon. Secretary, Mr. Alex. Graham, F.S.A.

XLV. OF BUILDING.

Houses are built to live in, and not to look on; therefore let use be preferred before uniformity, except where both may be had. Leave the goodly fabrics of houses for beauty only, to the inchanted palaces of the poets: who build them with small cost. He that builds a fair house upon an ill seat, committeth himself to prison. Neither do I reckon it an ill seat only, where the air is unwholesome, but likewise where the air is unequal; as you shall see many fine seats, set upon a knap of ground, environed with higher hills round about it, whereby the heat of the sun is pent in, and the wind gathereth as in troughs; so as you shall have, and that suddenly, as great diversity of heat and cold, as if you dwelt in several places. Neither is it ill air only that maketh an ill seat; but ill ways, ill markets; and, if you will consult with Momus, ill neighbours. I speak not of many more; want of water, want of wood, shade, and shelter; want of fruitfulness, and mixture of grounds of several natures; want of prospect, want of level grounds; want of places at some near distance for sports of hunting, hawking, and races; too near the sea; too remote; having the commodity of navigable rivers, or the discommodity of their overflowing; too far off from great cities, which may hinder business; or too near them, which lurcheth all provisions, and maketh everything dear; where a man hath a great living laid together, and where he is scanted: all which, as it is impossible perhaps to find together, so it is good to know them, and think of them, that a man may take as many as he can: and if he have several dwellings, that he sort them so, that what he wanteth in the one, he may find in the other. Lucullus answered Pompey well, who, when he saw his stately galleries, and rooms so large and lightsome, in one of his houses, said, "Surely an excellent place for summer, but how do you do in winter?" Lucullus answered, "Why, do you not think me as wise as some fowls are, that ever change their abode towards the winter?"

To pass from the seat to the house itself, we will do as Cicero doth in the orator's art, who writes books *de oratore*, and a book he entitles *Orator*: whereof the former delivers the precepts of the art, and the latter the perfection. We will therefore describe a princely palace, making a brief model thereof. For it is strange to see now in Europe, such huge buildings as the Vatican, and Escurial, and some others be, and yet scarce a very fair room in them.

First therefore, I say, you cannot have a perfect palace, except you have two several sides; a side for the banquet, as is spoken of in the book of Esther; and a side for the household: the one for feast and triumphs, the other for dwelling. I understand both these sides to be not only returns, but parts of the front; and to be uniform without, though severally partitioned within; and to be on both sides of a great and stately tower, in the midst of the front; that as it were joineth them together on either hand. I would have on the side of the banquet, in front, one only goodly room above stairs, of some forty foot high; and under it a room for dressing or preparing place, at times of triumphs. On the other side, which is the household side, I wish it divided at the first into a hall and a chapel, with a partition between, both of good state and bigness; and those not to go all the length, but to have at the farther end a winter and a summer parlour, both fair: and under these rooms a fair and large cellar sunk under ground; and likewise some privy kitchens, with butteries, and pantries, and the like. As for the tower, I would have it two stories, of eighteen foot high apiece, above the two wings; and a goodly leads upon the top, railed, with statues interposed; and the same tower to be divided into rooms, as shall be thought fit. The stairs likewise to the upper rooms, let them be upon a fair open newel, and finely railed in, with images of wood cast into a brass colour; and a very fair landing-place at the top. But this to be, if you do not appoint any of the lower rooms for a dining-place of servants; for otherwise you shall have the servants' dinner after your own: for the steam of it will come up as in a tunnel. And so much for

the front. Only I understand the height of the first stairs to be sixteen foot, which is the height of the lower room.

Beyond this front is there to be a fair court, but three sides of it of a far lower building than the front. And in all the four corners of that court, fair staircases cast into turrets on the outside, and not within the row of buildings themselves: but those towers are not to be of the height of the front, but rather proportionable to the lower building. Let the court not be paved, for that striketh up a great heat in summer, and much cold in winter: but only some side alleys, with a cross, and the quarters to graze, being kept shorn, but not too near shorn. The row of return on the banquet side, let it be all stately galleries; in which galleries let there be three, or five, fine cupolas, in the length of it, placed at equal distance; and fine coloured windows of several works. On the household side, chambers of presence, and ordinary entertainments, with some bed-chambers; and let all three sides be a double house, without thorough lights on the sides, that you may have rooms from the sun, both for forenoon and afternoon. Cast it also, that you may have rooms both for summer and winter; shady for summer, and warm for winter. You shall have sometimes fair houses so full of glass, that one cannot tell where to be come to be out of the sun or cold. For imbowed windows, I hold them of good use (in cities, indeed, upright do better, in respect of the uniformity towards the street), for they be pretty retiring places for conference; and besides, they keep both the wind and the sun off; for that which would strike almost through the room, doth scarce pass the window. But let them be but few, four in the court, on the sides only.

Beyond this court, let there be an inward court, of the same square and height, which is to be environed with the garden on all sides: and in the inside, cloistered on all sides upon decent and beautiful arches, as high as the first story: on the under story, towards the garden, let it be turned to a grotto, or place of shade or estivation: and only have opening and windows towards the garden, and be level upon the floor, no whit sunk under ground, to avoid all dampishness. And let there be a fountain, or some fair work of statues, in the midst of this court; and to be paved as the other court was. These buildings to be for privy lodgings on both sides, and the end for privy galleries: whereof you must foresee, that one of them be for an infirmary, if the prince or any special person should be sick, with chambers, bedchamber, *antecamera* and *recamera*, joining to it. This upon the second story. Upon the ground-story, a fair gallery, open, upon pillars; and upon the third story, likewise, an open gallery, upon pillars, to take the prospect and freshness of the garden. At both corners of the farther side, by way of return, let there be two delicate or rich cabinets, daintily paved, richly hanged, glazed with crystalline glass, and a rich cupola in the midst; and all other elegancy that may be thought upon. In the upper gallery too, I wish that there may be, if the place will yield it, some fountains running in divers places from the wall, with some fine avoidances. And thus much for the model of the palace; save that you must have, before you come to the front, three courts: a green court plain, with a wall about it: a second court of the same, but more garnished, with little turrets, or rather embellishments upon the wall; and a third court, to make a square with the front, but not to be built, nor yet inclosed with a naked wall, but inclosed with terraces, leaded aloft, and fairly garnished on the three sides; and cloistered on the inside with pillars, and not with arches below. As for offices, let them stand at distance, with some low galleries to pass from them to the palace itself.

REVIEWS.

BUILDING DEVELOPMENT.

A History of Architectural Development. By F. M. Simpson, Architect, Professor of Architecture, University College, London. Vol. I. ["*The Architects' Library*" *Series, published by Longmans, Green, & Co.*]

Professor Simpson has produced the first volume of what promises to be a very useful book, if the two succeeding volumes preserve the high level of this. The development of architecture from the earliest times is a large subject, embracing many divisions, upon each one of which copious treatises might be—and in many cases actually have been—written. The merit of the present book lies in the manner in which the main stream of development is followed without long excursions into its tributaries, while, at the same time, sufficient indications are given as to the sources whence full information can be derived regarding those matters upon which the author has not room to dilate.

It must not be supposed, however, that we have here a mere *réchauffé* of other people's dishes. Professor Simpson has visited many of the buildings to which he refers, and nobody is likely to be so captious as to decline to read a history of architecture merely on the ground that the author cannot speak from first-hand knowledge of all the places he describes, covering, as they must, a large proportion of the civilised world. The study of the buildings themselves undoubtedly lends to the pen or pencil of the writer a facility and power of conviction which are not to be obtained from an inspection through the eyes of other observers; and we have an instance of Professor Simpson's independence of view in his convincing restoration of the west front of the Erectheum.

Egypt, of course, starts the long history of building development, Assyria comes next, then Persia. Next follows Greece with its superlative

treasures; and it is not a little illuminating to find how comparatively small a space suffices (on the scale necessarily adopted in so wide a survey) to deal with a phase of architecture which to some minds has represented all that was worthy of study in this the most monumental of the arts. Roman architecture follows that of Greece, and is succeeded by the efforts of the early Christians, which, in their turn, lead on to the far-reaching influences of the Byzantine style. There the present volume ends; but its two successors will deal, one with Romanesque and mediæval buildings, and the other with the Renaissance.

Architecture, it is true, is the most monumental of the arts; but in looking through Professor Simpson's pages one cannot help feeling how fleeting are its glories. Not even the Pharaohs, piling enormous rock on rock in their frostless climate, nor yet the Romans with their vast masses of concrete covering buildings of which the extent and splendour are never realised; not all the giants of the past, who counted labour and human lives as nothing in the pursuit of their schemes, have been able to stay the ravages of "Time's fell hand," or to conquer the indifference of their successors. Commerce and war seem equally destructive of ancient buildings. The one turns the Parthenon into a powder magazine, the other clears away the work of its forefathers to get more space for its own convenience. Most of the examples cited in these pages are ruins; some through convulsions of nature, but most through the neglect of man arising from changes produced either by the decay of a nation or the death of a creed. The gods of Greece have vanished, and who was there to preserve their temples? The gods of Rome fared slightly better, being partly taken over by the Christians along with some of their temples; but these cases were few, and most of the buildings of ancient Rome are buried in their own ruins and the accumulated *débris* of many centuries.

The slow but persistent changes which building underwent can be traced in Professor Simpson's book; but he is less inclined than most other writers to regard the course of development as showing a continuous evolution. He sees in certain forms and features which resemble those of other lands and earlier times an indication of a fresh start rather than evidence of lineal descent. How far this was or was not the case will always remain an interesting matter of speculation, for no evidence other than a comparison of surviving fragments is ever likely to be forthcoming.

Not the least interesting part of the book are the pages dealing with the little-known buildings of Syria. They are mostly churches, but they are handled, especially as to their plans, with much skill and originality, and it is curious to find that among their ornamental features are some which are strangely akin to those which we are accustomed to associate with the mediæval work of Western Europe. Indeed, a perusal of these pages widens the horizon wonderfully and makes the reader feel how necessary it is for him to revise his youthful division of all architecture into Classic and Gothic. He is brought also to look below the surface, and to realise that true differences of style are the result, not of arbitrary changes of form, but of differences in the method of construction. One result of this way of treating the subject is that the numerous and excellent illustrations include a large proportion of plans and sections as well as photographs and sketches.

The whole volume is well printed and got up, and rouses a desire for the speedy appearance of the two succeeding parts.

Kettering. J. Alfred Gotch.

DEVIATION OF AXIS IN MEDIÆVAL CHURCHES.

La déviation de l'axe des églises est-elle symbolique? By R. de Lasteyrie, Membre de l'Institut. (Mémoires de l'Académie des Inscriptions et Belles-Lettres, vol. xxxvii.) Paris, 1905.

The subject of the masterly Paper which our Honorary Corresponding Member, the Comte de Lasteyrie, has recently presented to the Library possesses an interest which is perhaps more purely archæological than architectural. It is still admitted, however, that some knowledge of the history of his art must form part of the equipment of the architect of to-day, and it is of importance, therefore, that he should hold sane views as to the methods of building which were adopted by his predecessors. That the lesson taught by such a Paper as this may not be altogether without its present-day use seems to me to be indicated by the tendency in some quarters to exalt certain irregularities of line in mediæval buildings into "refinements," and to credit their builders with ideas which were entirely foreign to their methods.

The theory refuted by M. de Lasteyrie in this Paper had a certain vogue during the last century. In many mediæval churches we find a deflection in the alignment of the main axis of the building, the axis of the choir forming a more or less pronounced angle with the axis of the nave. This deviation of axis was explained as symbolical of the inclination of the head of Christ on the cross. I think, however, that serious students in England have long since rejected this theory, together with those of the "leper windows," cross-legged "crusaders," and other superstitions of the Gothic revival, and I cannot believe that M. de Lasteyrie is right in thinking that the majority of English archæologists still accept it. It is certainly true that it was still adopted by most archæologists in France when M. de Lasteyrie's Paper was written. One exception was M. Barbier de Montault, who was convinced to the contrary by the fact that not a single one of the liturgists of the Middle Ages ever mentions deviation of axis; and he asks how, if there were any symbolism in

this inclination, it could possibly have escaped writers like Hugh of St. Victor, Sicard, Durandus, and others, who see symbolism everywhere? M. de Lasteyrie analyses passages from these writers which have been quoted in support of the symbolic theory, and he proves conclusively that none of them do support it in the least degree. He remarks, too, that if any isolated passage could be found, it would scarcely carry much weight, for it would only belong to the category of fantastic interpretations invented afterwards to explain things with which it is evident that symbolism had nothing whatever to do. For instance, Durandus says that the sacristy in which the priest puts on the sacred ornaments signifies the womb of the Virgin in which Christ put on the garment of the flesh. Yet no one suggests that sacristies were added to churches with any idea of symbolism. M. de Lasteyrie quotes with approval a rule laid down by Le Blant, that we should never suggest a symbolic intention, or accept any explanation based on such a supposition, unless proof can be found in the writings of the Fathers or of the old liturgists. It would be an excellent thing if writers on symbolism would follow this sage advice.

There are other considerations which cannot be reconciled with the theory in question. The usual treatment of the crucifix shows the head of Christ leaning towards the right (*i.e.* towards the left of the spectator). But we find that, instead of the deviation of axis being always towards the north, it is frequently towards the south, and there is no reason to assert even that the cases of northward deflection are more numerous than those of southward deflection. Before the thirteenth century, moreover, the crucifix represented a triumphant Christ, with head erect; nevertheless numerous churches of this earlier period show the same deflections which we find in later buildings, and these we find too in churches which have not a cruciform plan.

What, then, is the true explanation of these frequent deviations of axis? After discarding the æsthetic reason as unworthy of serious notice, and the impossible theory of structural movement, M. de Lasteyrie notices the explanation which supposes some local necessity, such as want of space, or the presence of some street or other obstacle which had to be avoided. Such causes do indeed account sometimes for irregularities in external walls, in aisles, in the length of transepts, and in the form and development of choir plans, but they do not generally necessitate any deviation of axis. We come, then, to the more general explanation of carelessness, indifference, or negligence on the part of the builders, to which far too much importance has been attached. Careful examination shows that, instead of irregularities being due to negligence or caprice, they arise simply from the practical difficulties which the builders encountered, difficulties frequently augmented by the impossibility of making a clean sweep of an earlier structure occupying the site.

It is easy to dispose of the objection sometimes made that irregularities are found even in cases where there is reason to believe that the builders were not inconvenienced by the presence of pre-existing work. Nothing could be more erroneous than the common vague idea that the buildings of the Middle Ages were carried out in a single campaign. This remark applies, not only to the numerous cases where different parts were built at quite different building-periods, nor only to cases of addition or enlargement, but also to churches which, although virtually of one period, were built in successive sections in order that the parts completed might be used for worship while the works were being continued in another part. A break in the masonry, a sudden interruption or change in design of some decorative feature in elevation or section, or an unlooked-for difference of level—such small things prove the truth of this observation. In order to realise the difficulty of adjusting a new section of the work to one already completed, we must remember that the part completed and used for worship would have to be partitioned off by screens or temporary walls which would completely intercept a through view, and that the builders possessed none of those instruments which would now be used in any difficult piece of setting out. It is easy to see how a trifling initial error might result in a very pronounced deviation. Here, in fact, we have the true explanation of most of the irregularities of plan and deviations of axis which are found in mediæval buildings.

To those who have made a serious study of mediæval architecture these observations will doubtless appear the merest truisms. They were admirably stated twenty-five years ago by Mr. J. T. Micklethwaite in his luminous Paper on "The Growth of English Parish Churches." "The key," he said, "to the history of the mediæval parish church is the fact that it never ceased to be used." . . . "The most extensive works were always done piecemeal. We sometimes see churches, and large ones, too, which at first sight look the same date throughout, as if they had been built entirely new straight out of the ground. But a careful examination of them will generally reveal the order of the work, and show evidence of the earlier buildings even in those which have replaced them. The distortion of some plans, for which strange and fantastical reasons have been invented, appears natural enough when we remember the conditions under which the builders worked and the difficulty which they must have experienced, with the imperfect instruments at their command, in setting out a complicated building on a site already occupied" (*Archæological Journal*, xxxvii. 371). So wrote Mr. Micklethwaite, and so, almost in identical terms, writes M. de Lasteyrie. The *entente* is complete.

One or two of the examples discussed by M. de Lasteyrie may be noticed here. At Notre-Dame, Paris, the deflection of the axis occurs precisely at the point where there was an interruption of the works. The axis of the abbey-church of Saint-Denis shows deflection in three directions, corresponding to its three phases of construction during the twelfth century. The plans of Saint-Germain-des-Près, Paris, Saint-Laumer, Blois, and Saint-Nicolas-du-Port teach the same lesson. It would be tedious to quote English plans of the same kind; for, indeed, examples of deviations of axis and irregularities arising from the same cause exist in hundreds of parish churches. Of larger churches I will only mention one—York Minster—which can easily be tested from Mr. Roland Paul's plan (*The Builder*, 7th January 1893, text page 11).

M. de Lasteyrie concludes his Paper with an English example (Beverley Minster) of deviation in the transverse axes of the bays of the nave. Let me cite a corresponding example from France. In R. J. Johnson's *Specimens of Early French Architecture* there is an excellent plan (plate 16) of the monastic church of Saint-Leu-d'Esserent (Oise), which shows a definite deviation in the transverse axes of the nave bays. The explanation is simple. Since Johnson's plan was made a restoration has revealed the fact that the church built after the foundation of the priory in 1081 was terminated eastward by an apse flanked by two smaller apses, the latter being on the site of the existing bay immediately west of the towers which flank the choir. The western responds of the nave arcade of the eleventh-century church still survive, and against the original west wall a narthex was built in the middle of the twelfth century. When the reconstruction of the church was undertaken in the last quarter of the twelfth century, beginning at the east end, the chevet was set out regularly in itself, but its transverse axis was not set exactly parallel with the west wall of the eleventh-century church. The first section of the work ended with the double bay west of the flanking towers, and the original nave would be left standing for use until this first section could be occupied. When the second section was undertaken, and the old nave taken down, the error was evidently discovered, and the bays on the north side of the nave were spaced a little more widely than those on the south side, so as gradually to meet the deflected line of the west wall, which could not have been removed without destroying the narthex and its towers.

To sum up. There was never the least idea of symbolism in the inclination of the choir plan of any mediæval church. Irregularities of this kind are simply accidental facts, resulting sometimes from the nature of the site, more frequently from obstructions arising from the presence of earlier structures, or from changes in, or additions to, the original plan; but in the majority of cases they are the inevitable result of the conditions under which the builders of the Middle Ages worked, and of the imperfection of the methods at their disposal for adjusting successive constructions in vast buildings, the separate parts of which were never erected all at the same time. M. de Lasteyrie quotes an interesting story which shows how architects of the Middle Ages regarded unnecessary irregularities. At Metz there is a church, built by the Celestines between 1371 and 1409, which shows a very pronounced deflection of its axis. A chronicle tells us that the architect, ashamed of having made his work so crooked, died of grief and distress!

JOHN BILSON.

MINUTES. IV.

At the Fourth General Meeting (Ordinary) of the Session 1905–06, held Monday, 18th December 1905, at 8 p.m.—Present: Mr. John Belcher, A.R.A., *President*, in the Chair, 13 Fellows (including 5 members of the Council), 25 Associates (including 2 members of the Council), 1 Hon. Associate, and several visitors: the Minutes of the Meeting held 4th December 1905 [page 93] were taken as read and signed as correct.

The Hon. Secretary announced the decease of Hyman Henry Collins, District Surveyor for the Eastern Division of the City of London, elected *Associate* 1859, *Fellow* 1877; and it was resolved that a vote of condolence with his relatives be passed, and that a letter be sent from the Institute to his bereaved family expressing the sympathy of members, and their full appreciation of the merits and work of their late colleague.

Mr. Frederick Wallen attending for the first time since his election as Fellow was formally admitted by the President.

The following candidates, found by the Council to be eligible and qualified for membership according to the Charter and By-laws, were recommended for election:—As FELLOWS (27): Reginald Blomfield, A.R.A., M.A. Oxon., F.S.A.; Walter Cave; Howard Chatfeild Clarke; Robert Burns Dick (Newcastle-on-Tyne); William Hawke [*Assoc.* 1895] (Cape Town); Gerald Callcott Horsley [*Owen Jones Student* 1887, 1888]; Benjamin Septimus Jacobs (Hull); Professor William Richard Lethaby [*Soane Medallist* 1879, *Pugin Student* 1881]; Edwin Landseer Lutyens; Mervyn Edmund Macartney; William Cecil Marshall, M.A.; Edward John May [*Pugin Student* 1876]; John Howard Morgan (Carmarthen); Ernest Newton; Segar Owen [*A.* 1896] (Warrington); Ambrose Macdonald Poynter; Edward Schroder Prior; Halsey Ralph Ricardo; Charles James Tait [*Associate* 1882]; Robert John Thomson [*Associate* 1894]; Thomas Harrison Thorpe (Derby); William Turnbull (Wellington, New Zealand); Hugh Thackeray Turner, F.S.A.; Edward Prioleau Warren, F.S.A.; Louis Alfred Westwick (Mansfield); Francis Albert Whitwell; Walter Henry Woodroffe [*A.* 1888]. As ASSOCIATES (2): John Archibald Lucas [*Qualified for Associateship* 1893] (Exeter); William Dathy Quirke [*Probationer* 1901, *Student* 1902, *Qualified for Associateship* 1905]. As HON. CORRESPONDING MEMBER: Martin Nyrop, Member of the Royal Academy of Arts (Copenhagen).

Papers by Messrs. Alexander Gascoyne and Arthur J. Dix on STAINED GLASS having been read by the authors and illustrated by cartoons, executed work, materials, and lantern slides, the Papers were discussed, and a vote of thanks passed to the authors by acclamation.

The proceedings closed, and the meeting terminated at 9.35 p.m.